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observers, asks whether the great LICK Observatory telescope could not for a time be devoted to this curious subject.

Results of satellite observations made here by various observers have been published at various times, and from some personal observations of the conditions prevailing at Arequipa I have little hesitation in saying that for the same observer the results given by the 13-inch telescope at Arequipa can not equal those given by the 36-inch on Mt. Hamilton; so that if it should finally turn out that certain marked peculiarities of the satellites had been observed at Arequipa which had not previously been observed here, this must be attributed to a superior diligence of the South American observers.

J. M. S.

1893, September 1.

THE CHANGE OF SENSITIVENESS IN DRY PLATES.

We quote some exceedingly interesting and useful remarks on the subject of dry plates in astronomical photography from a paper* by Professor MAX WOLF of Heidelberg University:

“* * It is not a pleasant experience to give an eight or nine hours' exposure to what is believed to be a highly sensitive plate, and then to find on development that the whole work has been thrown away, because the plate was really quite an insensitive one. The photographer who has had this experience repeated several times (as I have), very soon learns to become cautious. The only reliable test of sensitiveness, however, as I may here remark, is comparison by actual exposure to stars, the ordinary sensitometer tests being much too uncertain.

“Special caution is necessary in dealing with fresh plates. In the early part of my work I always noticed that new plates received from the makers were uniformly less sensitive than the previous ones, and that it was necessary to expose them a much longer time, so that it almost seemed as if the manufacture of dry plates was retrograding. * * The peculiarity is so strongly marked that during the last winter I was hardly able to obtain the same objects on a new lot of LUMIÈRE plates that I had previously obtained with the last plates of the same make, even with a three-fold greater exposure. * *

“I had, indeed, known earlier than this that plates changed

* The English translation in *Astronomy and Astro-Physics* for August, from the original in EDER's *Jahrbuch für Photographie und Reproductions-technik*.

somewhat in sensitiveness when stored, but I could hardly expect that the change would amount to so much as a three-fold increase; and yet it was so. After five months the new LUMIÈRE plates, at first so slow, were as sensitive as the preceding ones, and exceeded in sensitiveness all my other plates. A similar change took place in those of other makers. * *

"The sensitiveness does not by any means increase indefinitely with the time. On the contrary, it soon reaches a maximum, which persists for some time, and after this the sensitiveness diminishes. * *

"For LUMIÈRE plates this time has been found to be from five to seven months after manufacture. By taking advantage of this fact much can be gained; sometimes, as I have said, an increase in sensitiveness of three or four times. * *

"From the foregoing the astronomer may take warning never to assume that plates made from the same emulsion are equally sensitive if they are used at different times. * * For the same reason it is also very difficult to determine beforehand what exposure should be given in order to obtain stars of a certain magnitude. It is quite impossible to do this (leaving out of the question changes in the transparency of the air), without taking into account the age of the plates."

W. W. C.

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The success of the LICK Observatory eclipse expedition to Chile is largely due to the efficient and willing aid given by those with whom I came in contact—more particularly to the Regents of the University of California; the Government of Chile; JOHN KING, British Consul at Carrizal Bajo; the firm of GONZALEZ, IZAGA & CO., owners of the Mina Bronces mine; FILIPE BRAY, captain of the mine; and R. A. WALKER, engineer from Valparaiso.

A day or two before the eclipse the staff of volunteer assistants was farther increased by the arrival of the following gentlemen: W. F. GALE, the amateur astronomer from Paddington, N. S. W.; Mr. TIRAPGUI, mining engineer from Santiago; J. J. AUBERTIN, author of several books of travel, and his private secretary, A. HOLE, both from London; Lieutenants BROWN, BODGER and WILSON, R. N., H. M. S. *Melpomene*. All of the above-named gentlemen took active parts in the observations during totality.